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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/030,531	04/04/2002	Tae-Song Kim	P/2292-51	4150

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EXAMINER

FIORILLA, CHRISTOPHER A

ART UNIT PAPER NUMBER

1731

DATE MAILED: 02/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/030,531

Applicant(s)

KIM ET AL.

Examiner

Christopher A. Fiorilla

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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1. Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1-5, 8 and 9, the phrase "sol-like" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "-like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

Claim 2 is indefinite as amended because it recites "the sol or sol-like solution includes metalorganic material used as a sol-like solution...". This appears to indicate that the sol contains "sol-like solution".

2. Claims 1-7 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The phrase "the sol-like solution being a material that can be processed as a solution by a sol-gel process" added to claim 1 does not appear to find support in the original specification.

3. Claim 2 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

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The specification does not appear to support a sol, which "includes metalorganic material used as a sol-like solution".

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Danforth et al. (5,997,795) in view of Clough et al. (5,756,207) for the reasons as set forth in the previous office action.

7. Claims 1-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Danforth et al. (5,997,795) in view of Clough et al. (5,756,207) as applied to claim 8 above, and

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further in view of either one of Radford et al. (5,457,598) and Butler et al. (5,137,634) for the reasons as set forth in the previous office action.

8. Applicant's arguments filed December 4, 2002 have been fully considered but they are not persuasive.

With respect to the rejection of the claims under 35 USC 112, second paragraph applicant argues:

Relative to claims 1-5,8 and 9, it is respectfully submitted that the term "sol-like" in fact does not render the claim indefinite, because the applicant is allowed to be his own lexicographer and the applicant adequately defines this term at page 3 of the specification, at lines 16-19.

Without intending to limit the claims, it is noted that the sol-like solution, in accordance with the invention, includes metalorganic material. Such material includes, for example, alkoxide, hydrate or carbonate, where the metal organic contains PZT component. The metalorganic substance is used as a sol-like solution, either singly, in mixing with other material, or in a dissolved state in a solvent. Indeed a "sol-like solution" can be defined as a "a material which can be processed as a solution by the sol-gel process", as referenced in claim 1 as amended. A key term search for "sol-gel" yields 6,276 prior patents, which use the well known term. See. e.g., U.S. patent no. 6,485,987. Hence it is respectfully submitted that the applicant has fully responded to the 112 rejections and reconsideration and withdrawal thereof is requested.

This argument is not persuasive. First, it is submitted that the term "sol-gel" was not in question. This term, admittedly, is a well known term in the art. The basis for the rejection is that it is unclear as to what is encompassed by the term "-like" in the phrase "sol-like". Further, with respect to the reference to page 3, lines 16-19 of the specification it is submitted that there are compositions which lie within the recited description which are not "sol-like", for example compositions which would include large particles would not act like a sol, but lie within applicants definition. Thus, the metes and bounds of the claim cannot readily be determined.

With respect to the rejection of the claims under 35 USC 103 applicant argues:

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It is initially noted that none of the cited references teach a high density ceramic thick film[s], whose dimensions as known, range from one to about 200 micrometers, by screen printing to complete or obtain a patterned ceramic thick film without a further patterning [process]. The foregoing negates the possibility that any of the references, whether taken singly or in any combination, teaches or suggests the present invention.

This argument is not persuasive. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In referring to the Abstract of the cited art, using solid freeform fabrication techniques, photonic bandgap structures (a kind of ceramic body having a certain shape) are formed. Solid particulate materials are mixed with a binder and, through a computer-control process, are built layer by layer to form a structure. Additionally, in the indirect methods, unfilled polymeric materials are built layer by layer to form a negative mold for the photonic bandgap structure. The cavities within the mold may then be filled with a slurry incorporating solid particulate materials. Subsequent processing may include mold removal, binder removal, densification and secondary infiltration steps to form a photonic bandgap structure having the desired properties.

However, in the above process, since the structure is not a film, it cannot be fabricated by screen printing.

This argument is not persuasive. First, it should be noted that these arguments pertain to the Danforth et al. reference. It is submitted that the indirect method is not relied upon by the examiner, thus applicants references to making a mold and removing the mold are not relevant. The examiner references extrusion in the office action, which is related to the direct method in Danforth et al. Further, applicants allege that since the structure (of Danforth) is not a film, it cannot be fabricated by screen printing. Although the drawings of Danforth et al. show a three-dimensional product in e.g. Figure 1, the process disclosed therein is not limited to the

production of such a product. Col. 1, lines 28-29 recite, "Photonic bandgap structures are man-made periodic lattices, in one, two or three dimensions, which are photonic analogs to semiconductors in electronics." It is submitted that a structure in two dimensions would be a film. Thus, the product of Danforth et al. could be produced by screen printing.

Although the examiner asserts that it would have been obvious to one skilled in the art to mold the paste of Danforth, et al. by screen printing, in view of the teachings of Clough, et al. applicant respectfully submits that in fact, Clough et al. teaches a process for coating a substrate with a transition metal oxide, not by screen printing. The only allusion in this primary reference to screen printing appears in the discussion by this reference of the conventional ceramic processing techniques. Therefore, the reference itself does not teach the present invention, and certainly not in specific form that is recited in the claims herein.

This argument is not persuasive. A reference must be considered for everything it teaches by way of technology and it is not limited to the particular invention it is describing and attempting to protect. See *EWP Corp. et al. v. Reliance Universal Inc. et al.* 225 USPQ 20, 25

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher A. Fiorilla whose telephone number is 703-308-0674. The examiner can normally be reached on M-F, 6:30am-3:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven P. Griffin can be reached on 703-308-1164. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7718 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0651.

A handwritten signature in black ink, appearing to read 'CA Fiorilla', with a stylized flourish at the end.

Christopher A. Fiorilla
Primary Examiner
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